

Newsletter

Volume 10, Number 3
May-June 1993

Director's Note

May 11, 1993 was noteworthy for two things. First, it was the final day of the Institute's fifth Cary Conference, an international meeting for consideration of broad issues in the field of ecology. Second, it was the occasion of the ground-breaking for the Institute's new auditorium.

It has been clear for some time that we need a larger and more versatile meeting facility than that provided by the lobby of the Plant Science Building. The new auditorium will have ample theater seating for scientific meetings such as future Cary Conferences and for regular public events like the IES Friday seminars. Even more exciting, it will have a state-of-the-art communications system, with the capability to receive as well as to broadcast. The Institute will be able to offer on-site educational training programs that will benefit science teachers around the country. By planning teleconferences, we can hold meetings at a fraction of their present cost and travel time. When large conferences are held here, we will be ready to share the proceedings with colleagues around the world. The possibilities are many, and we look forward to exploring them.

The IES Newsletter is published by the Institute of Ecosystem Studies at the Mary Flagler Cary Arboretum. Located in Millbrook, New York, the Institute is a division of The New York Botanical Garden. All newsletter correspondence should be addressed to the editor.

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Cary Conference Links Species and Ecosystem Perspectives

As is the case with so many professions nowadays, the field of ecology has its share of specialists. Some ecologists focus on how and why populations of animals and plants fluctuate. Others deal with how species of organisms interact in a community, and how the composition or diversity of species in those communities change over time. Yet others specialize in understanding how the materials and energy cycle in an ecosystem. Today's complex environmental challenges, however, make it increasingly important to work, simultaneously, with information from both the population/community-levels and the ecosystem-levels.

When Institute of Ecosystem Studies scientist Dr. Clive G. Jones and adjunct scientist Dr. John H. Lawton (Centre for Population Biology, Imperial College, England) planned the Institute's fifth Cary Conference, "Linking Species and Ecosystems", their purpose was to consider these different perspectives and to try to develop new ways to link them*. They invited scientists who have been successful in doing this in their own research, and asked them to share their insights during the four-day meeting.

* Also on the Conference Steering Committee: Dr. James H. Brown (Univ. of New Mexico), Dr. Gene E. Likens & Dr. Michael L. Pace (IES), Dr. Moshe Shachak (Ben-Gurion Univ., Israel), and Dr. Peter M. Vitousek (Stanford Univ.)

Conference attendees considered research and results from the two contrasting points of view. Some described how changes in plant and/or animal populations — such as species introductions, elimination/extinction or changes in abundance — directly affect the functioning of the ecosystem, for example by changing patterns of nutrient cycling. Others considered the opposite perspective, demonstrating how ecosystem stresses can have profound effects on plant and animal populations. Throughout, the emphasis was on the best ways to link biological and non-biological processes.

For example, the forests of the northwestern United States — ecosystems made famous recently by the well-publicized controversy between loggers and environmentalists — were the subject of a talk by Dr. Jerry F. Franklin of the College of Forest Resources at the University of Washington in Seattle. The title of his presentation, "Mission Impossible: Separating Conservation of Species from the Management of Natural Resources," succinctly points out the connections between the spotted owl, old growth forests, logging and the salmon fishery. To manage all of these effectively we need to manage landscapes, and to do this we need to be able to integrate species populations (e.g., owls and salmon) with whole landscapes and ecosystems.

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Cary Conference co-chairmen Dr. John Lawton (left) and Dr. Clive Jones with Dr. Jo M. Anderson of Rothamsted Experiment Station, England. Dr. Anderson's presentation considered linkages between soil processes and soil organisms.

Conference, from page 1

Drs. Jones and Lawton are co-editing a book —*Linking Species and Ecosystems*— due to be released in late summer 1994. They hope that the ideas and examples from

the conference will encourage and guide others to integrate different perspectives in the advancement of scientific understanding.



Dr. Jerry Franklin from the University of Washington in Seattle spoke on problems of the spotted owl and northwestern forests. Here he is with Dr. Jane Lubchenco, University of Oregon, one of those responsible for summarizing conference conclusions during the final session.

* * * * *

Cary Conferences have been held at the Institute every other May since 1985, each focusing on a different topic. The purpose of the conferences, as opposed to most scientific meetings, is to consider the process of science, rather than the detailed content, to help integrate and advance the discipline of ecology. Funding for the 1993 Cary Conference was through grants from the Mary Flagler Cary Charitable Trust and the National Science Foundation.



Dr. Nico van Breemen (Agricultural Univ., The Netherlands), left, in informal discussion with IES plant ecologist Dr. Charles D. Canham. Dr. Canham's presentation linked plant population dynamics with forest ecosystem functioning.

Dr. Pickett Honored

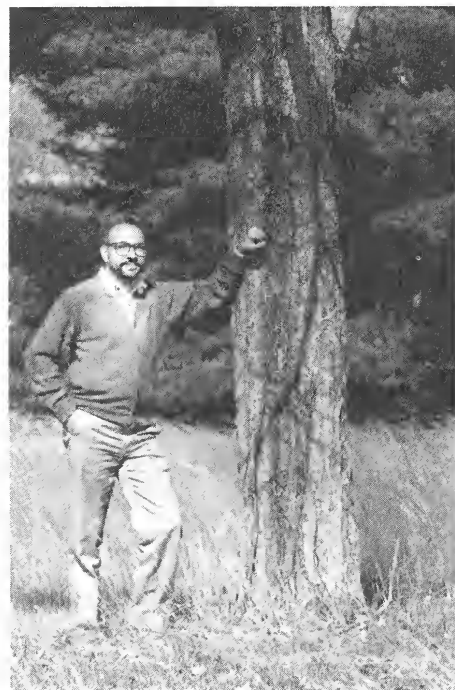
Institute staff gathered in the Plant Science Building lobby on the afternoon of April 16 to congratulate Dr. Steward T.A. Pickett on his election to the American Academy of Arts and Sciences. In announcing this honor, Institute Director Dr. Gene E. Likens told his audience, "As you may or may not know, there are two prestigious honorific academies in the United States to which a scientist may be elected; this is one of them. I suppose there may be on the order of 1.5 million scientists in the United States, some 2,000 of whom have been elected to the American Academy of Arts and Sciences. This is truly a distinguished honor for Steward and a high honor for the Institute." Dr. Pickett joined a group of 194 other new Fellows and 35 Foreign Honorary Members elected at the Academy's 213th Annual Meeting on April 14 in Cambridge, Mass. in recognition of their distinguished contributions to science, scholarship, public affairs and the arts.

As described in the Academy's press release, "The American Academy was founded in 1780 by John Adams and other leaders of the young Republic, who chartered the learned society 'to cultivate every art and science which may tend to advance the interest, honor, dignity, and happiness of a free, independent, and virtuous people.' For over two centuries, the Fellows of the Academy have pursued

this purpose, by gathering together the country's leading figures from universities, government, business, and the creative arts to exchange ideas and to promote knowledge for the public interest. ... Today the Academy includes more than 3,800 Fellows and Foreign Honorary Members from a broad range of geographic, professional, and cultural backgrounds; among its Fellows are 172 Nobel laureates and 70 Pulitzer Prize winners." Dr. Likens himself was elected to the Academy in 1979.

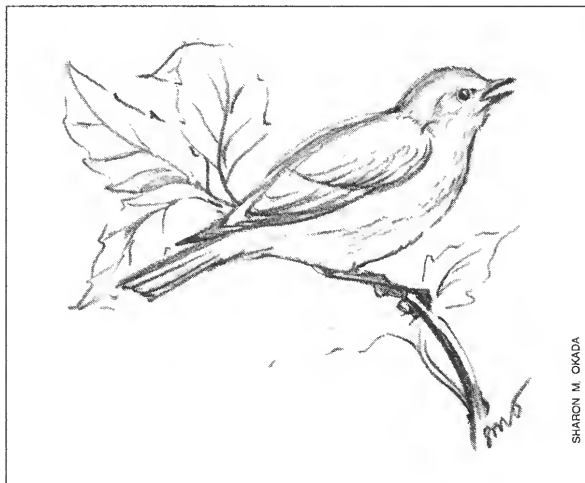
Dr. Pickett, a plant ecologist, joined the IES scientific staff in January 1987. His contributions to the field of ecology are largely in the areas of plant succession — the gradual process of change and replacement in a plant community — and natural disturbance; his 1985 book *The Ecology of Natural Disturbance and Patch Dynamics* (with Dr. Peter White) is one of Academic Press' continuing best-sellers in ecology. Among his research concerns at IES are ecosystem damage and recovery from the October 1987 snowstorm and the urban-to-rural gradient ecosystem studies. He recently has co-authored two books, *Humans As Components of Ecosystems: Subtle Human Effects and the Ecology of Populated Areas* (Mark D. McDonnell and S.T.A. Pickett, to be published in August 1993) and *Ecological Understanding: The Nature of Theory and the Theory of Nature*

(S.T.A. Pickett, Jurek Kolasa and Clive G. Jones, to be published in 1994), and is a member of the National Research Council's Committee on Scientific Issues in the Endangered Species Act. He is also involved in Institute education initiatives, and has helped lead the IES Research Experiences for Undergraduates Program since it began in 1988.



Arboretum's Bluebirds Set a Record

The bluebird trail at the Mary Flagler Cary Arboretum entered the 1992 record books for fledging more eastern bluebirds than did any other bluebird trail in New York state. Our contribution to the population of the state bird for last year was 147, out of 190 eggs laid in 22 of the Arboretum's 38 bluebird boxes. Compare these numbers with those from 1984, when 53 bluebirds fledged from 86 eggs laid (*IES Newsletter*, March-April 1986).



SHARON M. OKADA

The Arboretum's bluebird trail is part of a program initiated over 30 years ago by the local Ralph T. Waterman Bird Club in response to a sharp decline in the eastern bluebird population. One of several reasons for this decline was the loss of nesting sites. Bluebirds are cavity-dwellers, and because their bills are not strong enough to carve out their own nest holes they depend on natural cavities such as those found in dead trees and fence posts. As land was cleared for agriculture during the early 1900s, dead trees were removed; the effects of this habitat destruction were compounded when metal posts replaced wood fencing. In 1962 the Waterman Bird Club, led by its then-president Florence Germond, followed the example of concerned citizens in other states and set up nesting boxes in sections of three towns in central Dutchess County, N.Y. This "bluebird trail" had a total of 16 boxes, and during the first season only one was settled by bluebirds. That box was a success, however, resulting in two broods. Over the years the program has grown, and is now county-wide with over 400 boxes in place.

On a cold early spring day in 1975, members of the bird club brought the first boxes to the Arboretum. Nesting success was slow but steady as the new arrivals faced the same obstacles that challenge bluebirds everywhere: tree swallows, house wrens, house sparrows and other cavity-nesters competed for the boxes, and

raccoons were voracious predators of bluebird eggs and young. Over recent years, however, the impact of raccoons is decreasing with improvements in the design of nest boxes. Plastic pipes have replaced wooden poles, making it more difficult for raccoons to climb to the nest, and newly-built boxes have longer roofs — a 5" overhang is designed to prevent predators from reaching into the box, should they successfully manage to climb to the roof. Also, the fact

that the rabies epidemic has decimated the local raccoon population is going to be a plus this season, from the bluebird's point of view.

Each year boxes are added to the bluebird trail to accommodate new nesting pairs. Over the last few years Raymond Winchcombe, Institute manager of field research facilities, and his team of IES volunteers have built boxes to augment those made by bird club members. The wood used in construction is recycled from grape crates, saved for Mrs. Germond by Adams Fairacre Farms in Poughkeepsie, N.Y.

Bluebird boxes must be maintained if they are to be successful. This involves visiting each box in March to clean out old nesting material, mice and anything else that may have taken up residence over the winter. The Dutchess County bluebird trail,

coordinated by Mrs. Germond, has 15 monitors who are responsible for this annual cleaning as well as for checking the boxes regularly throughout the nesting season in order to record bluebird successes and failures. Dorcas Smith is the bluebird trail monitor for the Arboretum, and every week or so from the first nesting to the final fledging she checks boxes in the Lowlands, along the internal roadways, at the Gifford House and at the Greenhouse, noting her observations. It was her data that were reported at the beginning of this article.

Mrs. Germond predicts that 1993 will be a successful year for the eastern bluebird. Bluebirds in the Northeast generally have two clutches in a nesting season, but it is not unknown for them to have three. Because the weather has been so good this spring, some young birds already have hatched; it is therefore quite possible that many pairs will raise three broods before August.

* * * * *

In mid-May, at a meeting of the New York Upstate Bluebird Society at Cornell University in Ithaca, Florence Germond was honored for the length of time that she has worked with bluebirds. Dutchess County bird enthusiasts and IES staff add our thanks to Mrs. Germond in recognition of her 30-years-and-counting of dedicated service to the preservation of a species.



JILL CADWALLADER

Construction of the Institute of Ecosystem Studies' auditorium began with a ground-breaking ceremony on May 11. The auditorium, with a seating capacity of approximately 150, will feature a sophisticated telecommunications system (see the Director's Note on page 1). The site is immediately east of the Plant Science Building. Pictured above are, l. to r.: Oakleigh B. Thorne, vice chairman of the IES Board; Gretchen Long Glickman, chairman; Edward A. Ames, secretary and Cary Trustee; and Dr. Gene E. Likens, treasurer and Corporation president, and IES director.

IES Notes

• IES Director Likens and fellow members of the National Commission on the Environment have published *Choosing a Sustainable Future*, a report that, as the executive summary states, "provides concrete and detailed policy recommendations that can lead the United States on the path toward sustainability". The 19-member commission, convened in 1991 by World Wildlife Fund (WWF), comprised environmentalists, educators, economists and members of the business community. Copies are available from Island Press, Covelo, Ca. at 1-800-828-1302, from 8 a.m. to 5 p.m., Pacific Coast Time.

• Pests at the IES greenhouse have a new force to contend with. Greenhouse Manager David Bulkeley, whose continuing success with Integrated Pest Management (IPM) to control harmful insects was detailed first in the November-December 1991 issue of the *IES Newsletter*, was at the Family Pet Center in the Galleria Mall (Poughkeepsie) when he spotted a tank containing small lizards. He learned that these reptiles, called swifts, prey on worms and insects of all kinds, and wondered if they might be useful in controlling the greenhouse's burgeoning pill bug population. (Also known as sow bugs, these isopod crustaceans live under the greenhouse pots and crawl inside to graze on fine rootlets.) When Mr. Bulkeley released 12 swifts in the tropical unit, the animals took one wide-eyed look at their lush new world and dashed for cover. It will be a while before the success of this new approach to IPM can be measured in the greenhouse. In the meantime, visitors are invited to report lizard sightings to the greenhouse staff.

Calendar

CONTINUING EDUCATION

Summer semester programs are:

July 12-16: **Colored Pencil Illustration**

July 12-16: **Drawing in the Garden**

July 19-22: **Using Local Plants in Inquiry-Based School Projects**

July 23: **A Tour of Stonecrop**

July 24: **Landscape Design for the Small**

Residential Site

July 31: **Field Course: Transit and Level Use for Landscape Construction**

August 7: **Field Course: Composting**

August 14: **Cold Frame Rewards**

August 21: **Water Gardens**

Visit or call the Gifford House (number below) for a free catalogue describing these programs.

SUNDAY ECOLOGY PROGRAMS

Free public programs are held on the first and third Sunday of each month, except over holiday weekends. Programs begin at 2 p.m. at the Gifford House on Route 44A unless otherwise noted. Call (914) 677-5359 to confirm the day's topic.

June 20: **How Plants Defend Themselves**, a walk led by Dr. Clive G. Jones

July/August programs: At press time, the July-December Sunday Ecology Program schedule had not been finalized. For information on upcoming programs, call the number below.

• In case of inclement weather, call 914/677-5358 after 1 p.m. to learn the status of the day's program. For outdoor programs, dress for the weather conditions, with long pants, socks and sturdy waterproof shoes.

OUTDOOR SCIENCE CENTER

Ecology Discovery Ponds are open during Arboretum hours from July 1-August 31. Children accompanied by adults will become "Eco-Investigators" when they borrow a self-guiding booklet and kit at the Gifford House. Call for information on these and other Outdoor Science Center programs.

"CORNFIELDS"

Drawings by Carol Ann Morley will be exhibited at the Plant Science Building throughout the summer.

GREENHOUSE

The IES greenhouse is a year-round tropical plant paradise as well as a site for controlled environmental research. A recent addition to the tropical unit is a collection of Venus fly-traps. These endangered plants get their nitrogen from insects that become trapped in the plants' hinged leaves. The greenhouse is open until 4:00 p.m. daily except public holidays. Admission is by free permit from the Gifford House.

GIFT SHOP

Senior Citizens Days: On Wednesdays, senior citizens receive a 10% discount (except sale items). **From June 20:** All remaining perennials ... buy one, get one free!

ARBORETUM HOURS

(Summer hours: May 1 - September 30; closed on public holidays)

Arboretum grounds are open Mon. - Sat., 9 a.m. - 6 p.m.; Sun. 1 - 6 p.m. (Note: The Greenhouse and Plant Science Building close at 4 p.m.)

The **Gift and Plant Shop** is open Tues. - Sat., 11 a.m. - 5 p.m. and Sun. 1 - 5 p.m.

(Closed weekdays from 1 - 1:30 p.m.)

• All visitors must pick up a free permit at the Gifford House Visitor and Education Center on Route 44A for access to the Arboretum. Permits are available until 5:00 p.m. daily.

MEMBERSHIP

Become a member of the Mary Flagler Cary Arboretum. Benefits include a member's rate for IES courses and excursions, a 10% discount on purchases from the Gift Shop and a free subscription to the IES Newsletter. Individual membership is \$30; family membership is \$40. For information on memberships, contact Janice Claiborne at (914) 677-5343.

For more information, call 914/677-5359 weekdays from 8:30 - 4:30.

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